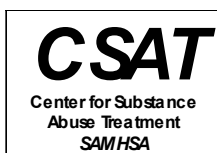


# **State of Missouri Treatment Needs Assessment Project**



## **Final Project Report**

**September 2003**

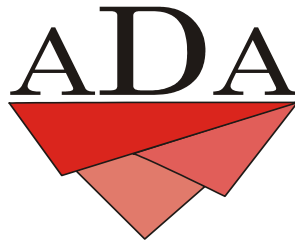


# **State of Missouri**

## State Treatment Needs Assessment Project

### **Final Project Report**

Prepared by



**Missouri Department of Mental Health**  
Division of Alcohol and Drug Abuse

and



**September 2003**

# **1. INTRODUCTION**

## **1.1 Overview**

This document represents the final report of Missouri's second State Demand and Needs Assessment Studies Program (STNAP) sponsored under CSAT Grant Number 5H79TI1229. The second STNAP produced three additional studies and associated final reports. Individually and together, these studies have provided the staff of Missouri's Department of Mental Health, Division of Alcohol and Drug Abuse (ADA) the tools to estimate more comprehensively and accurately, substance abuse treatment need and unmet need, as well as for targeting specific, high-risk subgroups and/or service areas across the state for treatment planning.

## **1.2 Overview of the State of Missouri's Demand and Needs Assessment Studies**

Substance abuse continues to be one of the nation's most serious health problems. Poor health, disrupted social relations, an inability to maintain employment, and welfare dependency are just a few of the negative consequences associated with substance abuse. The community often suffers repercussions as well, such as increasing levels of crime, violence, and unemployment and the diversion of a growing level of tax funds (Horgan, Marsden, & Larson, 1993). Every sector of society spends large sums of money to combat these repercussions, and States tend to shoulder the heaviest financial burden (National Center on Addiction and Substance Abuse at Columbia University, 2001). Fortunately, substance abuse is treatable; the benefits of increased government attention and funding for the treatment needs of the population flow not only to the individual but to the community as well (Gerstein et al., 1994; Hubbard et al., 1989).

Given the high prevalence and devastating impact of substance abuse, treatment is a high priority for the federal government. For its part, the Center for Substance Abuse Treatment (CSAT) has made funding available for states to develop the data collection and analysis infrastructures for surveillance, planning, budgeting, and policy development surrounding substance abuse treatment. In 1992, CSAT awarded the first round of 3-year contracts to 13 States to conduct STNAP projects. Since then, CSAT has issued one or more contracts to each of the 50 States, the District of Columbia, Puerto Rico, and the Virgin Islands.

In response, the State of Missouri, in collaboration with Research Triangle Institute (RTI), has now completed two STNAP projects consisting of complementary studies to provide reliable and valid data to facilitate planning substance abuse treatment and to aid in the implementation of effective and cost-efficient services. The specific objectives of the STNAPs have been to:

- develop statewide and regional (sub-state) estimates of alcohol and drug treatment needs for the total population and key population groups;
- determine the extent to which these needs are being met by the current treatment service system;
- develop low-cost, valid methodologies that can be used by the state in subsequent years to estimate treatment needs; and
- identify key gaps in the state's current data collection efforts relating to needs assessment.

To achieve these goals, the first demand and needs assessment project consisted of a family of six studies that included both primary data collection and analysis and secondary analysis of existing data. The specific studies were:

Study 1: Alcohol and Other Drug Household Estimates (Kroutil et al., 1998);

Study 2: Treatment Needs Among Missouri's Adult and Juvenile Arrestees (Bonito, Kuo, & Bray, 1999a; Bonito, Kuo, Moore & Bray, 1999b; Decker & Wilmes, 1998);

Study 3: Estimating Treatment and Intervention Needs of School-Aged Populations (Farrelley, Sanchez, Wendling & Bray, 1999);

Study 4: Estimating Treatment Need Using Social Indicators and Synthetic Estimation (Zand, Cho, Malstrom, & Ho, 1998);

Study 5: Assessment of the Current Substance Abuse Treatment System in Missouri: 1997 (Holden, Koetse, & Bray, 1999); and

Study 6: Integrating Population Estimates of Substance Abuse Treatment Need in Missouri (Sanchez, Kuo, Akin, Moore, & Bray, 1999).

Prior to the STNAP studies, no comprehensive data on alcohol and other drug use and abuse existed for the State of Missouri. The annual National Survey on Drug Use and Health (NSDUH) [formerly the National Household Survey on Drug Abuse or NHSDA] incorporates some respondents from Missouri, but the numbers are too small to provide precise estimates of substance use for the state, regions, or counties. In addition, although the NSDUH collects information about past year symptoms of dependence and past year negative consequences associated with use, these data do not sufficiently document treatment needs, especially unmet needs, among the household population in Missouri (see SAMHSA, 1997). Therefore, the studies from both of Missouri's STNAPs provide an important knowledge base from which to improve efforts to meet substance abuse and treatment needs and to allocate resources.

Building on the six studies from the first STNAP described above, the second STNAP included the following three studies:

- Study 1: Substance Use and Need for Treatment Among the Household Population in Missouri: 2001/2002 (Weimer, Greene, and Rachal, 2003);
- Study 2: Substance Abuse and Treatment Needs Assessment Project (STNAP) of Missouri Jail Inmates, 2001 (O’Neil, Krebs, Koetse, Forti, and Rachal, 2003);
- Study 3: Integrating Population Estimates of Substance Abuse Treatment Need in Missouri: 2003 Update (Weimer, Candrilli, Kroutil, and Rachal, 2003).

## **2. SUMMARY OF STNAP ROUND 2 STUDIES**

### **2.1 Study 1: Substance Use and Need for Treatment Among the Household Population in Missouri: 2001/2002**

This study was designed to assess the substance use and need for treatment among Missouri’s adult and adolescent household population. Consistent with the original intention of this report, the State will use the results to (1) better understand substance use and need for treatment and intervention among household residents, and (2) help inform policymakers about the substance abuse and treatment needs of adults and adolescents so that policy and funding decisions can be made to best address this problem. In addition, Missouri’s ADA will use the results from this study in conjunction with the findings from the other studies conducted as part of the State’s first and second round STNAP and integrate the findings into a comprehensive planning tool. This tool, or spreadsheet model, will be the heart of the second round integrative report and will, at the service area level, provide estimates of substance use and need for treatment for mutually exclusive populations, including household adults and adolescents.

#### ***Study Design and Methodology***

The 2001/2002 Missouri Household Telephone Survey was a stratified two-phase, two-stage random-digit-dialed (RDD) sample of residents age 12 and older living in households with telephones. The RDD sample included both unlisted and listed telephone numbers. The data were collected from July 2001 to February 2002 by RTI.

Telcordia of Morristown, New Jersey, provides to Survey Sampling, Inc. (SSI) a magnetic tape file of all working area codes and exchanges in the United States every six months, or more frequently in states with area code splits or overlays. SSI also obtains a telephone directory database containing all listed residential telephone names and addresses. By merging the Telcordia file and directory file, SSI creates an RDD database with the count of listed telephone numbers within each 100-block of telephone numbers (i.e., a group of 100 telephone numbers with the same first eight digits); in an RDD design, the final two digits of a telephone number are

generated randomly. Only those 100-blocks containing one or more listed telephone number (called active) were included on the SSI database.

Because less than 15 percent of households contain one or more 12 to 17 year old adolescents, an alternative (other than RDD) sample source was developed at SSI. SSI maintains a “Targeted” database of listed households with a high probability of containing persons in specified age ranges, such as 12 to 17 years old. The source for the Targeted Adolescent listings includes age and address information from adolescent magazine subscribers, driver’s license, and school registration databases. By using these databases the probability of identifying a household with a 12 to 17 year old increased from less than 15 percent to about 50 percent.

Using the SSI sampling frames, all active telephone exchanges within the State of Missouri were identified. Each telephone exchange was assigned to a county based on the addresses of the listed telephone residences within the exchange. If a telephone exchange overlapped two or more counties, the exchange was assigned the county containing a plurality of the listings. To control the geographic distribution of the sample, five sampling strata were created (Central, Eastern, Northwestern, Southeastern, Southwestern). The sampling frame for each stratum contained the active 100 blocks within the telephone exchanges assigned to one of the counties within the stratum.

A total of 6,521 interviews, 4,617 adult and 1,904 adolescents (12 to 17 years of age) were completed across the five sampling strata.

## ***Findings***

**Adult Substance Use.** Nearly two-thirds of adult household residents in Missouri (64%) used alcohol at least once in the 12 months before the survey, and nearly half (47%) used alcohol in the month preceding the survey. In addition, about 360,000 adult residents of Missouri households (about 9%) used alcohol heavily in the previous 12 months, and 248,000 adults (about 6%) drank heavily in the month prior to the 2001/2002 survey. Some of the highest rates of heavy alcohol use in the past year were observed for men, adults between the ages of 18 and 24, and single (i.e., never married) adults.

Approximately 8% of adults, or about 337,000 persons, used one or more illicit drugs in the 12 months before the survey, with 4% (171,000 adults) reporting past month illicit drug use. Almost all persons reporting illicit drug use reported use of marijuana. As was the case with heavy alcohol use, rates of illicit drug use in the past year were higher among men, adults between the ages of 18 and 24, and adults who were widowed, divorced, or separated.

Approximately 3% of Missouri adults reported both heavy alcohol use and use of at least one illicit drug and 2% reported use of more than one drug. Adults 18 to 24 year, Hispanics, and

males reported higher rates of heavy alcohol use and use of at least one illicit drug. Rates of poly-drug use were highest among the youngest age group and males.

About 5% of adults reported the non-medical use of prescriptions in the past year. Non-medical use was more common among females, younger adults, adults who were widowed, divorced, or separated, and those in school.

**Adolescent Substance Use.** About 28% of adolescents used alcohol at least once in the 12 months before the survey, and more than one in ten (13%) used alcohol in the month preceding the survey. In addition, about 3% used alcohol heavily in the previous 12 months and 1.5% drank heavily in the month prior to the 2001/2002 survey. Some of the highest rates of heavy alcohol use in the past year were observed for those between the ages of 15 and 17 (6%).

Approximately 10% of adolescents used one or more illicit drugs in the 12 months before the survey, with another 5% reporting past month illicit drug use. Almost all illicit drug use involved the use of marijuana. As was the case with heavy alcohol use, rates of illicit drug use in the past year were higher among adolescents between the ages of 15 and 17.

Approximately 6% of adolescent males and females aged 15 to 17 were heavy alcohol users in the past year, compared with 3% of all adolescent males and females. Approximately 18% of males and 15% of females aged 15 to 17 reported past year illicit drug use. Adolescent White males and females reported higher rates of illicit drug use than black males or females.

Past year heavy alcohol use and use of at least one illicit drug was reported by almost 2% of Missouri adolescents. Almost 2% of adolescents reported poly-drug use in the past year and less than 1% reported past year heavy alcohol use and poly-drug use.

Two-fifths of Missouri adolescents reported ever being prescribed a prescription drug. Nine percent of adolescents reported non-medical prescription drug use in the lifetime, 8% in the past year, and 5% in the past month. Pain killers were the most frequently reported type of prescription used.

**Adult Need for Treatment or Intervention.** About 3% of adults met criteria for past year alcohol or illicit drug dependence while 6% met the criteria for alcohol or illicit drug abuse. In addition, 10% of adults in the Missouri household population were in need of substance abuse treatment and 24% were in need of treatment or intervention.

Alcohol accounted for much of the need for treatment and treatment or intervention. Of the estimated 10% of adults in need of treatment, 9.5% specifically needed alcohol treatment. Of the 24% in need of treatment or intervention, 21% specifically needed services for alcohol. Men

were more likely than women to need treatment, and young adults aged 18 to 24 were more likely than adults in other age groups to need treatment.

Of the estimated 431,000 adults in need of treatment in the past year, only about 6,400 actually received detoxification, residential treatment, services in a halfway house, residential treatment, or methadone maintenance in the past year. Approximately 23,000 Missouri residents self-reported an unmet need for formal or informal treatment services (i.e., wanted more services than received or did not receive services but wanted them). Although most Missouri adults who were identified as needing treatment did not appear to see the need for assistance, the data on demand for services suggest a considerable unmet demand for treatment services.

**Adolescent Need for Treatment or Intervention.** About 4% of adolescents met criteria for past year alcohol or illicit drug dependence while 2% met the illicit criteria for alcohol or drug abuse. Overall, about 6% of adolescents in the Missouri household population in 2001/2002 were in need of substance abuse treatment, and 8% were in need of treatment or intervention.

Alcohol accounted for much of the need for treatment and treatment or intervention. Of the estimated 6% of adolescents in need of treatment, 5% specifically needed alcohol treatment. Of the 8% in need of treatment or intervention, almost 7% need it specifically for alcohol.

Male adolescents were more likely than females to need treatment and treatment or intervention, and older adolescents aged 15 to 17 were more likely than younger adolescents to need treatment and treatment or intervention services.

Of the estimated 28,500 adolescents in need of treatment in the past year, only about 100 actually received detoxification, residential treatment, services in a halfway house, residential treatment, or methadone maintenance in the past year.

**Substance Use and Need for Treatment among Pregnant Women.** Among women who were pregnant in the year before the survey, about 11% used illicit drugs, 3% reported heavy drinking, and 31% smoked cigarettes in the past year. In addition, 5% were current heavy smokers.

About 5% of adult women who were pregnant in the year prior to the survey were identified as needing substance abuse treatment while nearly one-quarter were in need of treatment or intervention. These estimates translated to about 7,700 pregnant women needing substance abuse treatment. Alcohol abuse accounted nearly all of this need.



## **2.2 Study 2: Substance Abuse and Treatment Needs Assessment Project (STNAP) of Missouri Jail Inmates, 2001**

The Substance Abuse and Treatment Needs Assessment Project (STNAP) of Missouri Jail Inmates, 2001, was conducted by Missouri's Department of Mental Health (DMH), Division of Alcohol and Drug Abuse (ADA). It is the first ADA study that estimates the prevalence of drug use (including alcohol and tobacco) and need for alcohol or drug treatment or intervention among the State's jail population. For this report, prevalence rates of substance use and treatment need were estimated for adult male and female jail inmates housed in four jails throughout the state. This report also examines inmates' willingness to obtain treatment, the barriers they encountered when seeking treatment, and the relationship between substance use and criminality. To determine how adult jail inmates' substance use and need for treatment differ from those of non-incarcerated adults, comparisons are made between jail inmates and adults who responded to the 2001/2002 Missouri Household Telephone Survey.

### ***Study Design***

The sampling frame for this study of Missouri's jail population utilized four jails in the state: Boone County, Jackson County, St. Louis County, and Greene County. A random sample of male inmates was drawn from the St. Louis County and Jackson County jails; all eligible males in Boone County and Greene County were approached to participate in the study. Sampling was unnecessary for females in all of the jails, given the smaller number of female inmates. Inmates who agreed to the interview had \$10 deposited in their account.

The questionnaire used in this study was developed from several relevant instruments, including the Center for Substance Abuse Treatment (CSAT) Inmate Core Protocol Survey Form; the Texas Commission on Alcohol and Drug Abuse (TCADA) Prison Survey; the Louisiana Substance Abuse Treatment Needs Assessment Prison Survey; and the Diagnostic Interview Schedule (DIS). The instrument was programmed into a computer-assisted personal interview (CAPI) and administered using a laptop computer.

### ***Findings***

**Characteristics of Missouri Jail Inmates.** The study obtained detailed information on numerous demographic and socioeconomic characteristics of the Missouri jail inmate sample, including the following: more than half of the inmates reported having never been married; 56% of the males and 44% of the females reported working full-time in the year prior to their current incarceration; more than half of the males and 70% of the females reported living in households that earned less than \$20,000 in the year prior to incarceration; and more than one-third of the male and female inmates reported never completing high school or receiving a General Educational Development (GED) degree.

The study also examined the inmates' physical and mental health status. Approximately half of the inmates rated their physical health as being excellent or very good, and 40% rated their mental health as being excellent or very good. Female inmates rated their physical and mental health less favorably than did their male counterparts. Females also reported a higher prevalence of general mental health problems and depression (as measured by a seven-item depression inventory). Similarly, women were more likely to report serious thoughts of suicide, although reports of suicide attempts were approximately the same for men and women.

At least half of the inmates reported having a relative or a spouse/partner who had an alcohol, drug, or psychological problem. Women were much more likely than men (52% compared with 20%) to report having a spouse or partner who had been incarcerated.

By far, the most commonly reported crime (irrespective of arrest) committed by the inmates in their lifetime was drug crime (trafficking, dealing, and possession): the mean number was 333, compared with 32 property crimes, and only 6 violent crimes. The mean number of lifetime arrests reported by the inmates was approximately 14.

**Substance Use.** Lifetime licit substance use was reported at similar rates by inmates and household respondents, but illicit drug use showed marked differences.

The large majority of jail inmates (95% of males and 89% of females) reported using a tobacco product at least once in their lifetime, and 70% of inmates reported having used tobacco in the month prior to incarceration. Lifetime tobacco use was reported at similar rates by household respondents; past month tobacco use, however, was substantially higher for inmates.

Similarly, almost all inmates had used alcohol in their lifetime: 96% of the males and 93% of the females. The majority also reported using alcohol in the year (82%) and month (66%) prior to incarceration. Lifetime alcohol use was reported at similar rates by household respondents; however, inmates were much more likely to report past year and past month use of alcohol.

Inmates reported high lifetime rates of cocaine, hallucinogen, amphetamine, and heroin/opiate use compared with household respondents. For example, over half of the inmates (51%) reported having ever tried hallucinogens compared with 10% of the household respondents.

Two-thirds of the inmates reported illicit drug use in the month prior to incarceration compared with 4% of the household respondents. In fact, less than 5% of the household respondents reported using any illicit drug during the past month. Inmates' reports of use in the month prior to incarceration, on the other hand, ranged from 7% for heroin/opiates to 53% for marijuana.

**Factors Related to Substance Use.** In addition to estimating prevalence rates for substance use, this study investigated the factors or characteristics of Missouri jail inmates that were related to alcohol and illicit drug use. Significant findings included the following:

Multivariate logistic regression models identified several variables that increased the likelihood of male inmates' heavy alcohol use in the year prior to incarceration, including powder cocaine use and having suicidal ideations. Factors that decreased the likelihood of heavy alcohol use among males included being unemployed, having three to five children (compared with having no children), and having been a victim of sexual abuse.

Multivariate logistic regression models identified several variables that increased the likelihood of male inmates' illicit drug use in the year prior to incarceration, including drug crimes committed in the year prior to incarceration and having a spouse or partner with a drug, alcohol, or psycho-logical problem. Age was found to be associated with a decrease in the likelihood of reported illicit drug use: older male inmates were less likely to report illicit drug use in the year prior to incarceration.

Multivariate logistic regression models identified several variables that increased the likelihood of female inmates' heavy alcohol use in the year prior to incarceration, including having a relative with a drug, alcohol, or psychological problem; having a spouse or partner with a drug, alcohol, or psychological problem; residing in a hospital, jail, or shelter, or having no fixed address in the year prior to incarceration; and reports of getting into arguments or fights in the year prior to incarceration. One factor—site—decreased the likelihood of heavy alcohol use among females: female inmates from Jackson County were less likely than those from St. Louis County to report heavy alcohol use.

Multivariate logistic regression models identified several variables that increased the likelihood of female inmates' illicit drug use in the year prior to incarceration, including having a spouse or partner with a drug, alcohol, or psychological problem; and reports of getting into arguments or fights in the year prior to incarceration. One factor—site—decreased the likelihood of illicit drug use: female inmates from Greene County were less likely than those from St. Louis County to report illicit drug use.

**Need for Treatment or Intervention.** The American Psychiatric Association's (APA) criteria for substance dependence and abuse, as published in the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV), were used to classify Missouri jail inmates in need of alcohol or drug treatment or intervention (APA, 1994). Major treatment findings included the following:

One-third of the Missouri jail inmates were found to be dependent on alcohol in the year prior to incarceration, compared with 2% of the household respondents.

More than 40% of the inmates were drug dependent in the year prior to incarceration compared with less than 1% of the household respondents.

More than half (53%) of the Missouri jail inmates met the criteria for alcohol or drug dependence in the year prior to incarceration, compared with 3% of the household respondents.

Eighty-six percent of the inmates were estimated to have needed alcohol or drug treatment or intervention during the year prior to incarceration. This figure is substantially higher than comparable figures for the household population (24%).

Multivariate logistic regression models found that for male inmates, factors related to an increased likelihood of meeting the criteria for alcohol or drug treatment included the number of drug crimes committed in the year prior to incarceration; having a relative with an alcohol, drug, or psychological problem; having a spouse who has been incarcerated; and high scores on the depression scale. Factors that decreased the likelihood included having six or more children (compared with having no children) and having difficulty looking forward to what your life would be like in the future.

Multivariate logistic regression models also found that for male inmates, factors related to an increased likelihood of meeting the criteria for alcohol or drug treatment or intervention included the number of drug crimes committed in the year prior to incarceration; having a spouse or partner with a drug, alcohol, or psychological problem; and inability to remember parts of childhood or certain periods of life. Factors that decreased the likelihood included the number of days incarcerated in the year prior to incarceration and having been a victim of sexual abuse.

Multivariate logistic regression models found that for female inmates, factors related to an increased likelihood of meeting the criteria for alcohol or drug treatment included the number of drug crimes and the number of arrests reported in the year prior to incarceration; having a relative with a drug, alcohol, or psychological problem; and having suicidal ideations. One factor—having three to five children (compared with having no children)—was associated with a decreased likelihood of meeting the criteria.

Multivariate logistic regression models found that for female inmates, factors related to an increased likelihood of meeting the criteria for alcohol or drug treatment or intervention included the number of drug crimes and the number of arrests reported in the year prior to incarceration; having a relative with an alcohol, drug, or psychological problem; never having been married; and difficulty looking to the future. One variable—race—was found to be

associated with need for alcohol or drug treatment or intervention: African American women were less likely than White women to meet the criteria for treatment or intervention.

**Relationship between Substance Use and Criminal Activity.** The study examined the complex relationship between the Missouri jail inmates' criminal activity and substance use. Key findings included the following:

Inmates who reported use of illicit drugs or illicit drugs excluding marijuana reported a higher mean number of arrests than inmates who had not reported use of illicit drugs or illicit drugs excluding marijuana. There was little difference between inmates who reported heavy alcohol use and non-heavy alcohol users in reported mean number of arrests.

Inmates who reported heavy alcohol use, illicit drug use, or illicit drug use excluding marijuana reported a higher mean number of violent crimes in the year prior to incarceration than did nonusers.

Inmates who reported illicit drug use or illicit drug use excluding marijuana reported a higher mean number of property crimes in the year prior to incarceration than nonusers. Inmates reporting heavy alcohol use reported a lower mean number of property crimes in the year prior to incarceration than non-heavy alcohol users.

Inmates who reported heavy alcohol use, illicit drug use, or illicit drug use excluding marijuana reported a higher mean number of drug crimes in the year prior to incarceration than nonusers.

Almost half of the inmates reported being drunk or high when they committed the crime that led to their current incarceration, and two-thirds of them indicated they would not have committed the crime had they not been drunk or high.

**Factors Related to Criminal Activity.** Regression analysis found that for male inmates, factors related to an increase in the number of violent crimes reported in the year prior to incarceration included not having graduated from high school; high numbers of property crimes committed in the year prior to incarceration; reports of being beaten or seriously physically hurt by an adult; and residing in a hospital, jail, or shelter, or having no fixed residence.

Regression analysis found that for male inmates, factors related to an increase in the number of property crimes reported in the year prior to incarceration included high numbers of drug crimes committed in the year prior to incarceration; having a relative with an alcohol, drug, or psychological problem; and powder cocaine use in the year prior to incarceration. One factor was associated with a decrease in reported property crime: having ever received a mental health diagnosis.

Regression analysis found that for male inmates, factors related to an increase in the number of drug crimes reported in the year prior to incarceration included site (inmates in Greene County were more likely than inmates in St. Louis County to report having committed a drug crime); race (non-Whites and non-African Americans were more likely than White inmates to report having committed a drug crime); high numbers of property crime reported in the year prior to incarceration; residing in a hospital, jail, or shelter, or having no fixed residence; and reported use of marijuana, hallucinogens, or amphetamine in the year prior to incarceration.

Regression analysis found that for female inmates, factors related to an increase in the number of violent crimes reported in the year prior to incarceration included the number of reported arrests in the year prior to incarceration, hallucinogen use in the year prior to incarceration, having one to two children (compared with having no children), and having sometimes or frequently experienced hallucinations.

Regression analysis found that for female inmates, factors related to an increase in the number of property crimes reported in the year prior to incarceration included age, reported arrests, and reported use of amphetamine in the year prior to incarceration.

Regression analysis found that for female inmates, factors related to an increase in the number of drug crimes reported in the year prior to incarceration included site (females in Greene County and Jackson County were more likely than those in St. Louis County to report having committed a drug crime); residing in a hospital, jail, or shelter, or having no fixed residence in the year prior to incarceration; crack, amphetamine, and heroin use in the year prior to incarceration; feelings of anxiety or tension in the year prior to incarceration; and poor, fair, or good physical health compared with very good or excellent health. Variables found to be significantly related to a decrease in reported drug crimes included age and having received a mental health diagnosis.

**Need for Treatment or Intervention and Criminal Activity.** Inmates deemed to be in need of alcohol or drug treatment reported more involvement with the criminal justice system. For example, the mean number of arrests in the year prior to incarceration was higher for inmates who met the criteria for treatment need compared with inmates who did not. Other findings included the following:

Inmates in need of treatment reported a higher mean number of violent, property, and drug crimes in the year prior to incarceration than inmates who were not in need of treatment.

Inmates in need of treatment or intervention reported a higher mean number of violent, property, and drug crimes in the year prior to incarceration than inmates who were not in need of treatment or intervention.

**Willingness and Barriers to Receiving Alcohol or Drug Treatment.** One-third of the inmates who reported using drugs in the year prior to incarceration said that they would have been willing to receive treatment. Female inmates were more likely to report willingness than were male inmates, 43% versus 31%, respectively.

The inmates who said they were willing to receive treatment (and had used drugs in the year prior to incarceration) were read a list of potential barriers to treatment and asked if any of these barriers had influenced their decision to not seek treatment in the year before their incarceration. Male inmates were most likely to report financial issues as the greatest barrier to treatment: 47% reported that they could not pay for treatment. Female inmates were most likely to report too few treatment slots: 48% stated that treatment programs were full.

Of the inmates who expressed a willingness to receive treatment, more than three-quarters (77%) cited at least one barrier that precluded them from seeking or receiving treatment.

**Implications for Treatment Planning and Policy.** A substantial proportion of Missouri jail inmates reported substance use problems and were found to be in need of treatment or intervention prior to incarceration. Additionally, inmates who reported drug use also reported a higher prevalence of arrest and criminal activity. This research has several implications that may benefit the State of Missouri:

- **Increasing availability of treatment services.** This step would address the substance abuse treatment needs of many who might otherwise end up in the criminal justice system. Reducing criminality would affect incarceration rates and potentially reduce the burden to the State.
- **Increasing the amount of comprehensive substance abuse treatment services available to incarcerated persons.** Treating jail inmates while they are incarcerated poses an excellent opportunity to meet the needs of a high-risk population and prevent the consequences and related costs of future criminality that can be exacerbated by substance use.
- **Diverting a portion of its jail inmates to community-based substance abuse treatment facilities.** Inmates with limited and nonviolent criminal histories who are in need of substance abuse treatment or intervention might be better served by treatment than incarceration, which could save the State valuable resources by reducing the short-term costs associated with incarcerating nonviolent substance users as well as the long-term costs of prosecuting and incarcerating those who recidivate.

## **2.3 Study 3: Integrating Population Estimates of Substance Abuse Treatment Need in Missouri: 2003 Update**

This study involved the design and implementation of an Automated Integration Model (AIM) for use by the state of Missouri. The AIM was designed to facilitate the use of integrated data by service planners and to extend the data's usefulness into the future. The Missouri AIM

can be used by the state in subsequent years to estimate treatment needs and to identify key gaps in the state's current data collection efforts relating to needs assessment.

The AIM facilitates planning tasks in a number of ways. The tool enables ADA planners to analyze, in a very dynamic and efficient way, how best to distribute both services and resources. For instance, the tool allows planners to estimate treatment need, service capacity, utilization, and costs, but also to observe changes in these estimates over time, to assess the patterns change in these estimates over time, and to examine treatment system configuration. Further, the spreadsheet is capable of producing estimates of need, demand, and costs for specific subpopulations, service areas, and planning areas, as well as statewide. Third, the updated estimates can be produced routinely given the tool's capability of inputting new data. Finally, the AIM is capable of producing reports in a number of formats including Forms 8 and 9 required for federal Block Grant reporting.

The Missouri AIM provides an organizing framework and automated mechanism to integrate the best available (usually research or census-based) data from multiple sources for providing treatment needs assessment-related information for important geographic entities in Missouri. This tool will allow personnel in the Missouri Department of Mental Health, Division of Alcohol and Drug Abuse (ADA) to assess how changes in service area, regional, and statewide demographic profiles and rate of substance abuse treatment need affect costs and available services. The tool is also designed to allow ADA to update these estimates as new data become available or to simulate various possible scenarios based on assumed data.

### ***AIM Design***

The Missouri AIM was developed using Microsoft Excel and Visual Basic for Applications. The user can easily navigate through the model by reading the instructions on each screen and by clicking a series of buttons in the upper left corner of each screen that will automatically guide the user through the model. The model also allows the user to update many input variables (i.e., new demographic breakdowns, rates of treatment need, annual capacity statistics, etc.) that affect the summary reports. The current Missouri AIM is designed so that the user may review reports based on existing (default) data, update the model with new data, or complete selected block grant application forms. A variety of reports are pre-programmed into the model, all of which can be updated with new data and printed out in hard copy form.

Within the model, users are able to identify all data sources used to develop the model. Possible input data which the user may supply include the following:

- location (state, region, service area);
- population counts by demographic group (gender, race/ethnicity, and age);



- population counts for special population subgroups (pregnant women, DUI arrestees, and injection drug users [IDUs]);
- substance abuse treatment need rates;
- substance abuse treatment demand rates;
- treatment capacity by modality and location;
- treatment utilization by modality and location; and
- treatment cost by level of care/modality.

Although users of the Missouri AIM will be able to change the input data noted above, the model also includes a set of unalterable, default data. The default data are those input data that produce the “best estimates” of treatment need and other estimates, based on the “best” data available at the time the model was developed. This will allow users to avoid unwanted alteration of the original data.

### ***Producing Estimates of Treatment Need***

In producing estimates for a given set of input data, the model relies on straightforward algebraic formulas driven by state-, region-, or service area-level data. Statistical estimations that require person-level data, such as regressions, weighted sums, were not used. This approach allows the use of fewer data sources and thus computes results rapidly when model parameters are changed. All formulas used can be made visible to the analyst. Most formulas are password-protected. While providing some security, this feature may provide users more flexibility in changing assumptions related to policy or research questions that cannot be changed by adjusting input data.

A number of estimates can be produced from the data inputted into the model, such as treatment utilization ratios (capacity/utilization) and excess treatment capacity (actual capacity utilization) both at the state, region, and service area levels. Estimates may also serve as intermediate input data. For example, in order to obtain an estimate for the number of people in need of treatment who are eligible for publicly subsidized services, the user will first need to compute the total number of individuals who are in need of treatment.

In summary, the approach has the advantages of being intuitive, simply constructed, and easy to use. Despite the model’s simplicity, our approach does allow sufficient flexibility such that increased complexity can be built into future versions. For example, future versions may include more extensive sets of input data, the addition of more features to increase the model’s user-friendliness, the ability to estimate additional variables of interest, and the ability to perform

statistical estimations and specific estimates of a special population's size and treatment need rates directly as part of one or more mutually exclusive populations.

A user's manual was developed which describes the various uses of the AIM and provides operational instructions and provides summary output for the default data. A copy of the user's manual for the Missouri AIM

## ***Findings***

**Demographics.** The vast majority (96%) of Missouri's adult population lives in households. Of those, 94% are in households with telephones, and 2% are in household with no telephones. Of the estimated 4% of Missouri's adult population who do not live in households, more than one third is institutionalized, 15% live in State prisons, 6% are jail inmates, nearly 6% is homeless, and less than 1% are federal prison inmates. An estimated 39% of non-household adults live in other group quarters.

Most adults live in the Eastern Region (35%) and Northwest Region (24%). Approximately 15% of adults live in the Southwest, 14% in the Central, and 12% in the Southeast Regions. With respect to the non-household adult populations across regions, largest percentage of homeless adults (37%) and institutionalized adults (30%) live in the Eastern Region. The largest percentage of adult jail (32%) and state prison (54%) inmates, and adults living in other group quarters (32%) live in the Central Region. The Southwest Region is the only region with federal prison inmates.

Household youth make up about 11% of the total population in Missouri. Within the group of household youths there are an estimated 13,688 adolescent dropouts; they are fairly evenly distributed by region.

Overall, adults aged 25 to 44 years comprise the largest age group of adults (39%). An estimated 30% of adults are aged 45 to 64 years; 18% are aged 65 years and older; and 13% are between the ages of 18 and 24. Overall, females slightly outnumber males (52% versus 48%, respectively). Most of Missouri's population is non-Hispanic white (85%). Approximately 10% is non-Hispanic black and 5% are of another race or ethnicity. White females outnumber white males and black females out number black males. However, males of other races or ethnicities outnumber females of other races or ethnicities. Among whites, blacks, and those of other races or ethnicities, most adult were ages 25 to 44 followed by adults ages 45 to 64. Among whites, there were more adults aged 65 and older than adults 18 to 24. However, among blacks and those of other races or ethnicities, more adults were ages 18 to 24 than 65 or older.

**Need for Treatment.** There were approximately 491,223 adults and adolescents estimated to need treatment. As anticipated, non-household adults have considerably higher

rates of treatment need compared with household adults. However, because of their greater representation in the population, household adults comprise the majority of adults in need of treatment. Specifically:

- With a prevalence rate of 10.4%, an estimated 405,731 adults in households with telephones need treatment. They comprise about 88% of the adult population in need.
- Among the non-household adult populations, jail inmates (66%) and State prison inmates (53%) have the highest treatment need rates. Collectively, they comprise about 4% of the adult population in need, or about 45% of the non-household adult population in need.
- Institutionalized adults have an estimated rate of need for treatment of 37%. However, because institutionalized adults make up a third of the non-household population, they also make up most of the non-household adult population in need of treatment (48%).

Among household youth, the treatment need rate was 5.8%, or 29,378 individuals. Youths in need represented about 6% of the total population in need of treatment.

For this study, it is estimated that 12.5% of household adults and youth in need of treatment would seek services and that 50% of those in need who would seek treatment are eligible for subsidized treatment. It is also estimated that 50% of non-household adults in need of treatment would seek services and that 100% would be eligible for subsidized treatment. This translates into 79,135 individuals who would seek treatment and 52,858 adults and youth who would be eligible for subsidized services.

The Eastern Region has the highest number of adults estimated to need treatment (194,919), followed by the Central Region (78,585), Northwest Region (77,798), Southeast Region (56,684), and Southwest Region (53,859). Among the 20 service areas, St. Louis (SL) and Jackson County (JC) had the highest estimated number of adults in need (136,031 and 27,930, respectively). The distribution of each type of mutually exclusive adult population group in need of treatment is fairly even across the five regions with the exception of households with phones and the homeless. Treatment need among adults in households with phones and homeless adults is considerably higher in the Eastern Region which is in keeping with its higher population of households with phones and homeless.

Among household youth in need, an estimated 30% live in the Eastern Region; 20% in the Northwest Region I; 20% in the Central Region; 17% in the Southwest Region; and 13% in the Southeast Region. Like adults, the St. Louis (SL) service area had the highest estimated number of adolescents in need (3,936).

**Special Populations.** Statewide, an estimated 18% of pregnant women are in need of treatment. Based on these estimates and the populations of pregnant women by region, the largest number of pregnant women in both categories of need live in the Eastern Region. Among the 20 service areas, St. Louis (3,131), Jackson County (1,793), and service areas 16 (1,132) and 10 (1,012) had the highest estimated number of pregnant women in need of treatment services.

Injection drug users number approximately 12,834 individuals statewide with an estimated 100% in need of treatment. Based on regional population estimates, the largest proportion of injection drug users in need of treatment live in the Eastern Region (35%), and the least in the Southeast Region (12%).

The population of individuals with DUI arrests is estimated to be about 25,777 (i.e., based on 100% in need of treatment). The largest number of individuals with DUI arrests lives in the Eastern and Northwest Regions (8,639 and 7,613, respectively). Again, of all the service areas, St. Louis and Jackson County had the largest number of persons arrested for DUI in need of services.

**Current Treatment System.** Based on data obtained from ADA, there were 47,182 annual admissions in Missouri during fiscal year 2002. Based upon the total number of annual admissions and the estimated number of adults and adolescents in need of treatment who would seek services, there is an estimated 31,954 adults and adolescents in need of treatment who did not receive services. The Eastern Region has the highest estimated number of individuals with unmet treatment need (14,994), which comprises almost 50% of the statewide total. The St. Louis (SL) service area has the highest estimated number of individuals with unmet treatment need (9,527).

### **3. Summary**

The second STNAP series of studies provide a rich resource to State substance abuse treatment planners and providers who must make difficult decisions on how to allocate limited resources. Study 1 provided valuable information to State officials on the broad alcohol, tobacco, and other drug treatment needs among the state's household population so that planners may better develop appropriate screening, assessments and treatment programs. Study 2 furthered the development of a foundation of data and information about substance use and treatment needs among the state's jail inmate population.

## REFERENCES

- Bonito, A.J., Kuo, T.-M., & Bray, R.M. (1999a, June). Substance dependence or abuse and treatment needs among juvenile arrestees in Missouri: 1997 (final report prepared for the Missouri Department of Mental Health, Division of Alcohol and Drug Abuse, under Contract No. CSAT 270-95-0031; RTI/6490-060). Research Triangle Park, NC: Research Triangle Institute.
- Bonito, A.J., Kuo, T.-M., Moore, R.P., & Bray, R.M. (1999b, June). Substance dependence or abuse and treatment needs among the Missouri adult arrestee population: 1997 (final report prepared for the Missouri Department of Mental Health, Division of Alcohol and Drug Abuse, under Contract No. CSAT 270-95-0031; RTI/6490-060). Research Triangle Park, NC: Research Triangle Institute.
- Candrilli, S., Weimer, B., & Rachal, V. (2003, September). Missouri Automated Integration Model User's Manual. (prepared by RTI and the Missouri Division of Alcohol and Drug Abuse, under CSAT Grant No. 5H79TI1229 /RTI Project No. 7765.000.100). Research Triangle Park, NC: RTI.
- Farrelley, Sanchez, Wendling & Bray (1999). Estimating Treatment and Intervention Needs of School-Aged Populations (final report prepared by Research Triangle Institute and the Missouri Division of Alcohol and Drug Abuse, under Contract No. CSAT 270-95-0031/RTI Project NO. 6490). Research Triangle Park, NC: Research Triangle Institute.
- Gerstein, D.R., Johnson, R.A., Harwood, H., Fountain, D., Suter, N., & Malloy, K. (1994). Evaluating recovery services: The California drug and alcohol treatment assessment (CALDATA) (general report prepared for State of Georgia, Health and Welfare Agency, Department of Alcohol and Drug Programs, under Contract #92-001100/Pub. No. ADP 94-629). Sacramento, CA: National Opinion Research Center.
- Holden, Koetse, & Bray, (1999). Assessment of the Current Substance Abuse Treatment System in Missouri: 1997 (final report prepared by Research Triangle Institute and the Missouri Division of Alcohol and Drug Abuse, under Contract No. CSAT 270-95-0031/RTI Project NO. 6490). Research Triangle Park, NC: Research Triangle Institute.
- Horgan, C., Marsden, M.E., & Larson, M.J. (1993, October). *Substance abuse: The nation's number one health problem: Key indicators for policy* (prepared for The Robert Wood Johnson Foundation). Waltham, MA: Brandeis University, Heller Graduate School, Institute for Health Policy.
- Hubbard, R.L., Marsden, M.E., Rachal, J.V., Harwood, H.J., Cavanaugh, E.R., & Ginzburg, H.M. (1989). Drug abuse treatment: A national study of effectiveness. Chapel Hill, NC: University of North Carolina Press.

- Kroutil, L.A., Guess, L.L., Condelli, W.S., Bonito, A.J., Akin, D.R., Walker, J.A., & Bray, R.M. (1998, April). Substance use and need for treatment among the Missouri adult household population: 1997 (final report prepared for the Missouri Department of Mental Health, Division of Alcohol and Drug Abuse, under Contract No. CSAT 270-95-0031; RTI/6490-10). Research Triangle Park, NC: Research Triangle Institute.
- National Center on Addiction and Substance Abuse at Columbia University. (2001, February). National survey of American attitudes on substance abuse VI: Teens. New York: Author.
- O'Neil, J., Krebs, C., Koetse, W., Forti, A., & Rachal, V. (2003, July). Substance abuse and need for treatment among Missouri jail inmates: 2001. (final report prepared by RTI and the Missouri Division of Alcohol and Drug Abuse, under CSAT Grant No. 5H79TI1229 /RTI Project No. 7765.000.200). Research Triangle Park, NC: RTI.
- Sanchez, R., Kuo, J., Akin, D., Moore, R., & Bray, R. (1999, June). Integrating population estimates of substance abuse treatment need in Missouri (final report prepared by Research Triangle Institute and the Missouri Division of Alcohol and Drug Abuse, under Contract No. CSAT 270-95-0031/RTI Project NO. 6490). Research Triangle Park, NC: Research Triangle Institute.
- Weimer, B., Green, J., & Rachal, V. (2003, September). Substance use and need for treatment among the Missouri household population: 2001/2002. (final report prepared by RTI and the Missouri Division of Alcohol and Drug Abuse, under CSAT Grant No. 5H79TI1229 /RTI Project No. 7765.000.100). Research Triangle Park, NC: RTI.